

Vol. 19 No. 1

www.mvus.org

January, 2005

Club Memorial Call W8KSE

10 GHZ Beacon, presently off the air.

Meetings at the old country Buffet !

Our January Meeting is on Fri. the 28th at 7:30 PM

Location: at the Old Country Buffet near SR 725 and Yankee Rd. in Centerville

Contents

De N8ZM.....	3
This and That.....	4
The Australien Connection.....	5
MVUS Net.....	6
Expert Advice, Roving & Contesting.....	7
Mobile Radio Installation Tips.....	8
Portable 4 Operation	9

****SVHFS conference April 29,30** Details will follow.**

Dayton Hamvention & ARRL Expo, 20,21,22 May, 2005
Bringing hams together from around the world

See ad in the February QST, pg. 112

Look up on the Internet www.hamvention.org , order your tickets there using a credit card
or order by mail from Tickets, Box 1446, Dayton, OH, 45401-1446
Ticket Price this year is \$ 20.- A 3-day bus ticket is extra and cost \$ 8.

This year is the 75th anniversary of the founding of the **Dayton Amateur Radio Association (DARA)**
There will be a special event station, call **W8BI** on the air during the month of February!

De N8ZM.

So far, winter has been pretty rough in SW Ohio, considering record snowfalls, flooding, and the cold. Actually, when I watch the news and The Weather Channel, I conclude that Mother Nature has it in for the whole planet this year! Let's hope that she quickly gets over whatever it was that got her riled up. The Sun has been fairly active as well, with some noteworthy sunspots and CME's to spice up, or mess up, the propagation, depending on what band you are using. I hope you have had a chance to take advantage of the conditions on your favorite bands.

I had a chance to chat with Al Ward, W5LUA, about the possible dates for the 2006 Microwave Update conference that we want to host here in Dayton. He tells me that the best date in 2006 is the weekend of October 20-22, to avoid conflicting with the good EME conditions and the Pak-Rats conference. This should give Mike Schulsinger some good info to use to start serious discussions with our preferred hotel. I am still looking for a couple of volunteers to take on some of the other key tasks for putting this conference together. Al hasn't actually signed us up as a sure thing yet, because we need to provide him with a more detailed plan than just that we'd like to host it. MUD is not so big that it is a monster logistical challenge, but there is a minimum amount of effort required for any conference to make it work. The 2005 MUD is scheduled for Southern California, which means that there will be a lot of the folks from the eastern US who won't make the trip. Those folks may be eager to get to our show and could generate a somewhat larger crowd than usual. I believe that one of the best attended MUD's was the one in Sandusky about 8 years ago. So let's get our heads together and start filling those committee slots.

Gerd asked me to remind you about a couple of things; the first being to make sure your MVUS dues are up to date. The second is that there is always room for more articles in Anom Prop, and you are just the ones to write them. Gerd says that he will take care of the grammar and spelling; he just needs the basic material to work with. The way I see it, you guys do a lot of interesting things, and they deserve to be shared with the group. That's why we are here. Our meetings are always filled with 1-on-1 discussions about latest exploits, and a much wider audience is out there. For example, I usually miss out on most of the conversations at the meetings by virtue of there being too many to keep up with, not to mention that I am usually the last to arrive. So go ahead and talk about your latest project or activity at the meeting, but then just take a few minutes to write up a couple of paragraphs for Gerd, so that the rest of us can hear what you did or learned or achieved.

As I write this, the January ARRL VHF contest is still going on, and will be for a couple more hours. I've worked about a half dozen stations so far, having very limited time and a rotor that isn't turning. Our usual group of incurable contesters didn't go to our Urbana site this weekend, not because it was too cold, but because the ice storm a couple of weeks back took out half of our antennas. Thankfully, the towers came through OK, so it is just a matter of putting up new radiators. We had been planning an upgrade anyway, so we have the new beams on hand, but weren't planning to have to deal with that project until later in the spring. Mother Nature did it again. Thanks to Red, W8ULC, we have doubled the size of our shack (an incredibly appropriate term in this case), so will be able to support more bands and operating positions, as well as have room to bunk comfortably overnight. So we are looking forward to the June contest with a lot of excitement. You are welcome to stop by for a visit during any contest when we are there, and we'll even put you on the air. We welcome more operators, even beginning VHF contesters, because we think that you will enjoy the challenge and the comradery.

The meeting this month will be on the 28th, and I just finished confirming the date with the manager at the Olde Country Buffet, so we're good to go. I also had a chat with him about an accommodation for those of you who just want pie and coffee, instead of a whole meal. He is willing to work with us on that, although I want to find out the details before I say anything specific. BUT, if you just want dessert, come on out this Friday; I think you'll be welcome. I'll be asking for some idea of how many want just dessert at the meeting, so I'll have some data to negotiate with.

This and That 1-05

- **Continents.** To get a rough feeling for the relative sizes of the continents let's compare them all to Europe (extending to the Ural mountains). The smallest, Australia, is 10% less; the largest, Asia, is 4- ½ times bigger. South America is two times, North America 2 ¼times, and Africa three times bigger. Finally, Antarctica is 40 % bigger than Europe.
- **Phone Tower Troubles.** People who live within 300 feet of cellular telephone towers report elevated levels of irreparability, depression, memory loss, dizziness, low sex drive, reduced appetite and nausea. What to do if you suspect problems? One suggestion by Medisch Dossier (Oct 2004): You can wallpaper your room with a layer of aluminum foil, creating, in effect, a Faraday cage. [Ode. 12-04]
- **24 GHz VUCC #28.** Lloyd Ellsworth Ne8i just received this diploma. It took just under 3 months to get. The Christmas Cove EN75ee Lake Michigan location helped quite a bit. Lloyd thanks all those who made it possible for him. Their help and assistance is appreciated.
- **Why Newspapers are better than TV.** Watching TV these days feels like going to a low-rent carnival. Everyone is shouting to you, grabbing at you, grease-smiling and cheese-baiting...and that's just the talk shows. Is there any guest on any late-night show who isn't selling something? Anyone who isn't telling stories written by an image team? [Dale Dauten]
- **Glass Insulator.** Jeanie Quimby of Eugene, Ore, bought two old glass insulators at a garage sale for \$ 5. She offered one of them on eBay with a starting price of \$5.99 and was shocked when it topped out at \$10,313. It turned out, the insulators dated back to the 1890s. [CSM]
- **Operating System.** No matter how an operating system is disguised, or shelled, it still sits between the user and the application. In other words, it gets in the way. How many recall the early days of PCs, when one lone voice in the debate insisted that operating systems were not necessary evils, but unnecessary? [Stan Runyon, 1991]
- **What's the Problem?** It is not that they can't see the solution. It is that they can't see the problem! [G.K. Chesterton]
- **Happiness.** A table, a chair, a bowl of fruit and a violin; what else does a man need to be happy? [Albert Einstein]
- **Changing French to English.** Baton Rouge > Red Stick; Detroit > Narrows; Corpus Christi > Christ's Body; Grand Teton > Big Bust. [Peter Ustinov]
- **To tell the Truth.** The Germans add, the French subtract a little, and the English change the subject. As for the Americans, "no comment". They act as if they own the truth. [Peter Ustinov]
- **Ad-Writing.** The length of the head phone cord was listed at 2m+-10%; I measured and came up with 1.8m for both headphones that I bought. The sales people obviously wanted to make it sound more. On the radio I heard the other day that something had gone up 5 tenth of 1 %, why couldn't they say ½%? [WB8IFM]
- **Trip to VK-Land.** Throughout the 1950s a trip (from Europe) to Australia meant a 5-week sea cruise for the average person as airline fares were exorbitant. Even now you must allow yourself to be sealed in to a winged canister for a full day in order to get there. Australia feels a long way away. [Bill Bryson]

The Australian Connection.

By Gerd, WB8IFM

Traveling nowadays involves taking along electronic gadgets like a laptop, digital camera or a cell phone. Usually those run on rechargeable batteries and there comes a point they need to be recharged. So you need to bring a charger with you. Naturally, each appliance has its own specifically designed charger. It would probably be too much to ask that one charger could supply all your gadgets.

The charger for your appliance is generally laid out for an operating input voltage range of 100 to 250 VAC, which should cover most countries. However, the connecting plug is another problem. In my case the charger used a power cord with the standard American 2 prong plug at one end. There might be power cords available for other countries, but they are probably hard to find and usually cost an arm and a leg. So I cut off a section of the cord with the US-plug attached to it. Then I terminated the cord that attached to the charger in a 2-pole screw type terminal block. Now I just need a pigtail 2 lead cord with a power plug of the country I am in. Since I travel to Germany often, I had one of their cord-plug pigtail for some time.

Prior to traveling to Australia I studied the Internet and found they use 240 VAC and the plugs (10A) have three blades arranged in a triangle. The two top blades are at an angle to each other and not parallel as in the US. The third blade in the center beneath is for ground and it is also slightly longer so it makes contact first when you plug in, an extra safety feature. Also because of the higher and more lethal voltage connectors are high quality and the regulations do not allow the handyman the degree of freedom we enjoy in the US.

Checking in a few shops I found power cords to cost about \$ 5, adaptors were \$ 9, but simple plugs were not to be found. So I hesitated, instead borrowed my son's adaptor, which he was using for his electric shaver. But we were planning a road trip where I would need the charger.

For some reason I had brought an extra US pigtail with me and as I looked at the plug I had an idea. Using a pair of pliers I twisted the two straight, parallel blades carefully so they acquired the "Australian slant". On my first try the plug did fit but was somewhat tight, but a few more bending efforts gave it the perfect fit. Of course, there is no ground connection, which is not necessary and not required for this type of equipment.



< An Australian Plug

V The Conversion: US > VK



MVUS Net
Report from Rod, WG9F

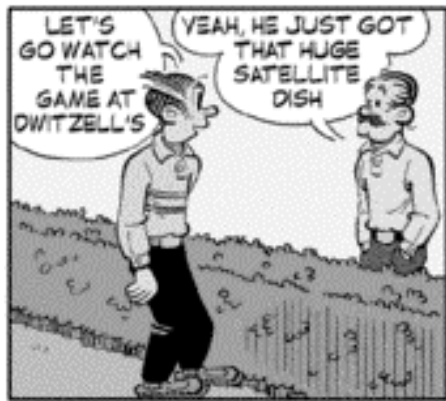
We had a good net yesterday (Dec 12-04), with nine participants in total, and many of us were using two bands simultaneously (VHF / UHF), in addition to 10 meters.

A few months ago I mentioned our Sunday morning net on the CATT (Cincinnati Ten Tuners) net, and since that time several CATT members with V/UHF interests have shown up.

I made this little matrix of yesterday's net participation to show the overlap of interests.

The list is ordered by check-in sequence.

Sun 12 Dec 2004
28.960 144.280 432.100 MVUS CATT
WG9F X X X X X
WB8BXG X X X
WB8GZX X X X X
KJ8K X X
W8DQ X X X X
KA8ABR X X X X
W8JAQ X X X X X
WB8DNO X X X X
W2RG X X X



Expert Advise (from the 1998 Hamvention)

A Microwave Rover Station

By Jack Nyiri AB4CR

Some people like the challenge of the Rover Station: helping get a sparse grid on the air, operating from different locations under limited conditions, etc. Here are several hints, learned by experience, which can help make your operation a success:

- 1) Why are you doing it? What is your goal of achievement? What will make it a success for you? Know this before you start planning. It may change with time, and experience, but set your goal.
- 2) Determine where you are going? Be realistic about what you want to do. Pick a route; pick what bands you want to use. Determine what equipment you want to use, what power level you will be able to have, what type of antennae for the chosen bands, what vehicle you will use.
- 3) Plan ahead! - drive the route, 2-3 months ahead of the event. Look ahead at what the traffic will be at the day and hour you will be driving through, and where possible -what road repairs are being planned. Determine alternatives, the unexpected WILL happen.
- 4) Put the full station together, and have it operating, with plenty of time for alteration, before the event. Find all required tools; place them where they will be easily accessible.
- 5) Have backup equipment; spares on hand (gas/water/batteries/fuses/food/humor) have everything for the isolation of the midnight location. Check out the vehicle thoroughly.
- 6) Choose a partner who is experienced with the bands, and can operate the equipment, someone you can be with congenially, and someone you know.
- 7) Publicize your operation, route. Make Schedules!
- 8) Get rested - sleep well the night before! (Who knows when you may get to sleep again!)

Microwave Contesting Methods

By Tom Whitted WA8WZG

Many people participate in the Microwave Contests. Here are some basic ideas to help you improve your score:

I use a separate radio for each of the VHF/UHF bands. In the microwave bands I use a common IF/exciter, with a single switchbox which permits me the quickest possible band change: transverter, power amp, mast mounted preamp, and antennae. I use separate control lines, with full sequencing, for fail-safe protection. The last thing you want -is to lose vital equipment in the contest.

A tube amplifier will give less TVI, and possibly avoid the time and delay of an irate neighbor, right when the big opening is heard.

I have discovered the beauty of Computer Logging -during and after the contest. The Equipment Controls are right in front of me, a single CW key line, and a single Headphone control. Get everything done well ahead of time, so that everything is tested and working long before you will put it to this burn-in. Be rested!! -mentally and physically.

Some secret weapons: Use EME operation with the "big guys" to give you band and location multipliers. Use FM/WBFM gunnplexers/laser for extra multipliers.

Mobile Radio Installation Tips

From the web, submitted by Ed, K2VEE and edited by Gerd, WB8IFM

We now have vehicles that are just short of rocket science as compared to the Model "T". One needs to understand air bag technology as well as electronic control of emissions, transmissions, braking, and various other computer controlled creature comfort equipment to consider when installing a Mobile Radio. Due to the very nature of "RF" energy, it is hard to control outside of the shielded environment. When manufacturers first started placing electronic equipment in the vehicles, they used good shielding. However, with rising cost, falling profit margins, and outsourcing of components came the use of unshielded wiring. This is where the installation of radio equipment became a real headache. As the speed of computers has risen over the years, so have the clocks that control their speed. These clocks have crept into our transmission bands. We must insure that our "RF" generating equipment does not interfere with the operation of safety equipment, i.e. the braking, transmission, airbag, and emission control modules. The following highlighted items need to be considered:

The placement of the **control panel** for the Mobile Radio must be within the reach of the operator. Think of yourself as being the operator with the shortest reach and install the radio there. For remote mount control heads this becomes an easy task. Avoid placing the controls in the overhead as much as possible. The operator does not need a dangling microphone cord in sight while driving.

Most modern radios come with a **display** that can be adjusted to a vision field or a backlight to provide good daytime viewing. Some of the older display units will wash out in bright sun light.

For **powering** the radio an auxiliary battery is preferable. Both the negative and the positive leads must be complete runs from the radio. The practice of using the chassis as a convenient location to attach the ground is not acceptable. Run the leads in a loom. Some installations will require you to make your runs along the opposite side of the vehicle to stay away from the electronic modules and their wiring. Provide a disconnect device at the battery. The use of a mountable breaker is encouraged. Fuse both power leads. When power is run through the firewall use rubber grommets to protect the wires from chaffing. Be careful with **Air Bags**. The deployment of air bags has been refined over the years to incorporate several safety devices. To set off the charge two of three sensors will need to be triggered. There have been instances of one sensor being in a damaged condition that will allow the deployment of the bag when one remaining sensor is triggered. There have also been deployments that were triggered from multimeter potentials while the technician was probing wiring under the dash. So be very careful when working in the area of the air bag sensors.

The **electronic control** of transmissions has become increasingly complex. Manufacturers are using the latest electronics to control factors such as when will the transmission shift and under what condition. Stray "RF" can and has caused the transmission to shift to another gear when the vehicle is in motion. As you can see, if the vehicle is doing 65 MPH down the freeway and shifts due to "RF" interference, the truck will do one or two unsafe conditions. Race the engine and or cause an accident due to sudden deceleration. Braking and emission controls can have the same effect upon the vehicle.

Antenna Installation: This is the single most important part of your installation. A poorly installed antenna will not function properly and might interfere with the operation of the vehicle. Recommended place for the antenna(s) is on the roof. Provide enough ground plane and separation for multiple antennas. Drill your hole(s) in the roof for the mount. Run the coaxial lead through and secure the mount making sure the serrated teeth have penetrated the paint on the underside. Run the coax along a path that does not interfere with the vehicles electronic control modules and sensors. Most of the newer vehicles will have control wiring running along both the passenger and driver side doors. The best path would then be down the hump or middle. Use your best judgment for the path to take when making your run. Remember to look for unshielded wiring. Run your coax in a manner that will keep it from going over sharp ridges or turns that are less than 10 times the radius of the cable. If in doubt, use loom. Terminate your coax at the radio leaving just enough coax for servicing needs. Include in your length enough lead to make up a connector about three times. Ensure that the shield is securely crimped and there are no gaps at the connector. Test the SWR and check for stray "RF" entering the cab. The practice of placing the antenna on the front fender has been a banned procedure for a long time. In recent concern over **RF radiation**, mobile radios have not been considered a significant safety hazard. This is due to the short duration of transmission. Use the prudent safety measures we have practiced in the past. Stay at least 6 feet from a transmitting antenna. Never look into an antenna when transmitting. Do not transmit with a damaged antenna. Run the coax cable in a manner that will not interfere with vehicle electronics. This leaves only one path for the antenna cables to go. Up the back window in the center window post. As you complete the installation you must check the vehicle's performance and proceed with caution.

Portable four operation, VHF and HF, Christmas 2004

By Rod Owen, WG9F

My family and I have spent the last several Christmas/New Years holiday seasons staying with relatives near Tampa, FL. We are usually there for about two weeks. For the past seven years I have mounted a “portable four” HF operation from that location, and most recently I have additionally operated two VHF bands. A simple long wire dipole antenna has been very effective and may be of interest to those who like to mount portable VHF operations. The surprising thing is, a very large wire antenna (relative to wavelength) works well on VHF, and while most everybody uses Yagis these days, it used to be common years ago. I got the idea from old ARRL handbooks which gave the circuit of a balanced transmatch for VHF and talked about the use of large dipoles fed with open wire line for VHF, especially for “hilltopping” and temporary portable operations.

I found that putting a lot of wire up in the air works, and the more you can get in the air, the better it works.

Antenna description.

If you intend to use a wire antenna for transmitting, a balanced doublet configuration (i.e. a dipole etc) fed with twin lead will generally be more efficient than a wire fed against ground with coax, for two main reasons at HF, and a third at VHF:

1. An efficient RF ground is difficult to obtain. A practical ground will be very lossy at HF, and even more so at VHF.
2. The balanced antenna may be fed with a balanced transmission line, like twin lead, and matched at the transmitter, and therefore used on any band. The length of the antenna wire does not need to be any particular integer multiple of the operating wavelength. Matching at the transmitter is convenient for frequency agility. This will give high SWR on the feed line, acceptable with a low loss line. Twin lead is far less lossy than coax.
3. Much of the radiated energy from a wire fed against ground comes from the wire where it is close to the ground, this is not good for VHF. With the horizontal doublet, all of the radiated energy comes from the height of the wire. Higher is better at VHF.

In addition to the above, for weak signal VHF, you would rather have a mostly horizontally polarized signal, which the doublet suspended through treetops is more likely to give.

As the antenna would only be in use for two weeks each visit and had to be erected and disassembled easily and quickly, I used insulated, stranded no. 22 hook-up wire obtained from Radio Shack. I used white insulation, usually unnoticed by neighbors. In my case the antenna was 360 ft long and fed at the exact center. It is important to keep the two halves equal! The length itself is not critical. I was fortunate in that the yards had plenty of mature trees, and that I had four adjacent yards available to me. The antenna height was about 36 ft at the center (the feed point) and the feeder hung vertically down from the center insulator. The center insulator was pulled up with string through a pulley after the antenna wires and the feed line were attached and soldered. I then pulled the antenna wires up over the high branches of several trees. No attempt was made to insulate the wires from tree limbs, the vinyl jacket was all the insulation afforded. For a power of 100 Watts or less this is sufficient. “Whirling” a weight attached to the end of the wire and throwing it over the trees reached good heights. It is easily possible to clear the tops of 40 ft trees this way. This process helped to string the wires over one or two more trees for each side of the dipole. Finally, I just tied the ends of the wire up to other treetops with a nylon string. No need to use end insulators due to low power and the temporary operation. The configuration of the antenna wires was far from a straight line. Only the first 40 ft from the center insulator formed a straight line. Beyond that the wires took many bends to conform to the trees. Different configurations over the years did not indicate any difference in performance.

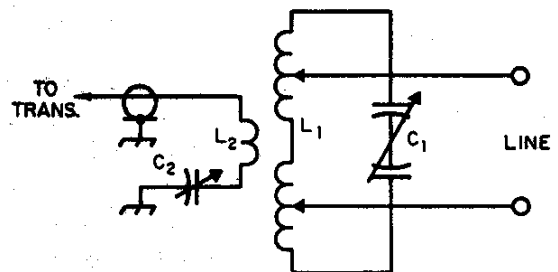


Figure 1. The ARRL Handbook VHF Transmatch, circa 1965

The feed line and matching networks.

I used 300 Ohm transmitting twin lead. This is more robust (and less lossy) than 300 Ohm TV ribbon cable, but not too much larger or harder to work with. It is easier to work with than 450-Ohm ladder line. (I would, however, recommend 450 Ohm ladder line for any permanent installation).

The matching networks were all balanced, link-coupled tuners, though the circuit of the HF tuner is a little different to those used for 6 meters and 2 meters. Balanced, link coupled tuners are the ideal way to achieve the balanced to unbalanced transition, and achieve the perfect impedance match simultaneously (i.e. they match the 50 Ohm coax connection on your TX to the complex impedance presented at the bottom end of the feed line. For all of the HF bands 80 through 10 meters, including all WARC bands, I used a Johnson "Kilowatt Matchbox". I won't go into too much detail here* about this, except to say that this antique gem contains very large, low loss components, and is therefore very efficient. It will also match an extremely wide range of complex impedances to 50 Ohms and give you a near perfect balanced-to-unbalanced transition. Although it is intended for HF, it can often be used on 6 meters in it's 10-meter switch setting. I had, however, separate matching networks for 6 meters and 2 meters. ARRL handbooks from the '60s contain a comprehensive sub-chapter on balanced, link-coupled tuners for feeding symmetrical wire antennas. A progression of circuit ideas is presented, culminating in a fairly simple, matching network. The circuit (figure 1) is straightforward. There are basically two link-coupled tuned circuits. The "main" tuned circuit is symmetrically tapped to connect to the feed line. The link coil which is wound over the center of the main coil has about one-third as many turns. This link coil has a series variable capacitor to ground, and the center of the coax feed goes to the "hot" end of the link coil. Tuning is done with a split stator variable capacitor with the rotor grounded. The two fixed taps on the "main" coil include about half its turns. There is no center tap on this coil and no ground connection to the coil. The twin wire feed goes directly to the two taps. A reflected power meter is inserted in the coax line from the TX to the network. Tuning is very simple. Using just enough power to get an indication the two capacitors are alternately tuned to reduce reflected power. Full power can then be applied. I have two of these networks (separate networks for 6 and 2 meters) in a box with a sampling line and reflected power meter. I have always been able to obtain a perfect, or near-perfect, match with any symmetrical wire antenna that I have tried. (I consider an SWR of less than 1.2 near-perfect).

Does the many- λ doublet antenna give gain over a $\lambda/2$ dipole at VHF?

I have not measured and compared the field strength at a distance of the many- λ wire antenna vs. a $\lambda/2$ dipole, though I plan to do this sometime. The 360' wire is 55.4λ on 2 meters and 19.3λ on 6 meters (allowing for a velocity factor of 0.95). It should therefore exhibit gain relative to a dipole, and subjectively it seems to. One would expect multiple lobes and sharp nulls, but I could not notice any unusual response during operation. The antenna receives well from all directions. If anyone cares to discuss this question, please check in to our Sunday morning net*.

VHF Operational Results.

I spent most of my operating time on HF, and there were no VHF contests during the period of portable operation. Also, I only ran 10 Watts on 6 and 2. However, several times a day I would listen around the low end of 6 meters and 2 meters. I heard a few beacons on 6 meters and one on 2 meters. I heard a few QSOs and was able to break in to some for a signal reports. There was more activity on 6 than on 2. I did not catch any enhancements on 2, but worked a few stations around central Florida. On 6, I worked all over FL, some across the Gulf into TX, and some in the lower southeastern states. One day, however, I had a surprise. Not hearing any activity on 6 meters, I put out a CQ on 50.125 Mc and a station came back from Nova Scotia and gave me 55. This was my best DX of the operation. All VHF contacts were made on sideband. Some CW CQ calls were made but no replies were received.

More information anyone?

*Anyone who wishes to know more about the circuits or function of the matching networks, or about feed lines, SWR and conjugate matching in general, can contact me on our Sunday morning net for full details and discussion. We enjoy talking about these and other radio topics on our Sunday net. I will enter into email correspondence if required, but I prefer the conversational mode of radio, preferably two-band full-duplex!

*Sunday Morning MVUS Ragche w Net 14:30 UT on 28.960